

Practice Example: McDonald's Cash Flows

Cash flow definitions

Cash flows from operating activities	Cash flows from investment activities	Cash flows from financing activities
Cash sales Purchases of material Salary payments Taxes etc.	New investments Replacement investments Divestments etc.	Interest payments Dividend payments Raising of debt Repayment of capital etc.

- > **Operating cash flow:** Reflects all cash in- and outflows related to the actual production and sale of the firm's goods and services.
- > **Cash flow from investment:** Reflects all cash in- and outflows related to the firm's investment activities.
- > **Cash flow from financing:** Reflects all cash in- and outflows related to the firm's debt and equity (and other sources of finance).

Balance sheet

- **Snapshot** of the firm's assets, liabilities, and equity
 - Sources of capital (Liabilities and equity)
 - Uses of capital (Assets)
- Basic structure of the balance sheet:
 - **Current assets**: All assets that are reasonably expected to be converted into cash within 1 year
 - **Non-current assets**: Assets which are expected to be in use for more than 1 year
 - **Liabilities**: Money that is owed to another party
 - **Equity**: Capital contributed by the owners of the company

Example: McDonald's

Balance Sheet (in Millions of USD)	31.12.2012	31.12.2013
Cash and equivalents	2'340	2'800
Accounts receivables	1'380	1'320
Inventories	110	122
Other current assets	1'090	808
<i>Total current assets</i>	<i>4'920</i>	<i>5'050</i>
Property, plant & equipment	25'290	26'370
Investments & advances	1'380	1'210
Intangible assets	2'800	2'870
Other assets	1'000	1'130
Total assets	35'390	36'630
Accounts payable	1'140	1'090
Taxes payable	300	210
Other current liabilities	1'960	1'870
<i>Total current liabilities</i>	<i>3'400</i>	<i>3'170</i>
Long-term debt	13'630	14'130
Other liabilities	3'060	3'320
Total liabilities	20'090	20'620
Common stock	17	17
Additional capital	6'583	6'423
Retained earnings	39'280	41'750
Treasury stock	-30'580	-32'180
Total shareholder's equity	15'300	16'010
Total liabilities and equity	35'390	36'630

Assets:

The three types of activities

- Let's assume the following items are related to the firm's operating activities:
 - Cash (put differently, the firm needs that cash to support its operations)
 - All other current assets (A/R, Inventories, Other current assets)
 - Other assets
- Let's assume the result of the firm's investment activities (so-called long-term assets):
 - Property, plant & equipment
 - Investments & advances
 - Intangible assets

Liabilities and equity:

The three types of activities

- Operating activity:
 - All current liabilities
 - “Other liabilities”
- Debt financing activities:
 - Long-term debt
- Equity financing activities:
 - Everything listed under equity

Simplified balance sheet

Balance Sheet	31.12.2012	31.12.2013
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Inventories	110	122
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Retained earnings	39'280	41'750
Treasury stock	-30'580	-32'180
Total shareholder's equity	15'300	16'010
Total liabilities and equity	35'390	36'630

Simplified balance sheet	31.12.2012	31.12.2013
Excess cash	0	0
Operating assets	5'920	6'180
Long-term assets	29'470	30'450
Total assets	35'390	36'630
Operating liabilities	6'460	6'490
Financial liabilities	13'630	14'130
Common stock and capital	6'600	6'440
Retained earnings	39'280	41'750
Treasury stock	-30'580	-32'180
Total liabilities and equity	35'390	36'630

General rules

- **Operating assets:** All asset positions that are not excess cash and that are not depreciated or amortized.
- **Long-term assets:** All asset positions that are depreciated or amortized (or impaired).
- **Operating liabilities:** All liabilities that are not interest bearing.
- **Financial liabilities:** All interest-bearing liabilities

Income statement

- Measures the company's financial performance **over a specific accounting period** (typically 1 year or 1 quarter).
- Performance: Summary of how the firm incurs its revenues and expenses through both operating and non-operating activities.
- Basic structure:
 - Revenues (e.g., sales)
 - Expenses (e.g., cost of sales, administrative expenses, taxes, etc.)

Example: McDonald's

Income statement (in millions of USD)	2012	2013
Net revenues	27'570	28'110
- COGS (excl D&A)	15'260	15'620
- Depreciation and amortization	1'490	1'590
Gross income	10'820	10'900
- SG&A Expenses	2'460	2'410
- Other expenses (income)	-253	-247
EBIT	8'613	8'737
- Interest expenses	533	537
Pretax income	8'080	8'200
- Income taxes	2'620	2'610
Net income	5'460	5'590

Income statement: The three types of activities

- In most instances it is safe to assume that everything that leads up to EBIT is related to the firm's **operating activities**.
- Interest expenses, however, are part of the financing activities! Consequently:
 - Income taxes are a mixture of operating and financing activities
 - Net income is a mixture of operating and financing activities
- We have to disentangle the two types of activities. How?

Adjustments for NOPLAT

- First compute the taxes the firm would have to pay without debt financing. These are the so-called **Adjusted taxes**.
- Then derive the net income the firm would have without debt financing. That's the so-called **Net Operating Profit Less Adjusted Taxes (NOPLAT)**
- **NOPLAT = EBIT – Adjusted taxes**

McDonald's (2013)

- Let's assume a tax rate of 32%. Remember that 2013's interest expenses are 537
- Adjustments:
 - Without debt financing, taxable income would be 537 higher
 - Consequently, the income taxes would be $537 \times 0.32 = 172$ higher
 - Hence, 2013's adjusted taxes are $2610 + 172 = 2782$
 - Hence, NOPLAT is:
 $\text{NOPLAT} = \text{EBIT} - \text{Adjusted taxes} = 8'737 - 2'782 = 5'955$
- We get the same result by adding the after-tax interest expenses ($537 \times (1 - 0.32) = 365$) to net income.

$\text{NOPLAT} = \text{Net income} + \text{After-tax interest expenses}$

$\text{NOPLAT} = 5'590 + 365 = 5'955$

Linking balance sheet and income statement

- The part of the firm's **Net income** (income statement), which is not distributed to shareholders as a dividend, is added to **Retained earnings** (Balance sheet).
- $\text{Retained earnings}_t = \text{Retained earnings}_{t-1} + \text{Net income}_t - \text{Dividend}_t$
- McDonald's (2013):
 - Net income = 5'590
 - Retained earnings increase by 2'470 from 39'280 to 41'750
 - Hence, the dividend was $5'590 - 2'470 = 3'120$.

Financial planning

- Introduction

- Historical Cash Flow Statement

- Cash Flow Projection

The cash flow statement

- The relevant questions:
 - How much cash did McDonald's generate in 2013?
 - How much did it generate from operations?
 - How much was used for investments?
 - How much was available for distribution to the providers of capital (debt and equity together)?
 - How much was available for distribution to the providers of equity?
 - How much was actually distributed to the providers of capital (debt and equity together)?

Operating cash flow

- From before, we know that NOPLAT is the net income which is attributable to the firm's operations
- However, NOPLAT is not a cash flow!
- Three adjustments are typically needed to get from NOPLAT to Operating Cash Flow:
 - **Add back depreciation**
 - **Subtract increases in operating assets**
 - **Add increases in operating liabilities**

Operating cash flow

Income statement	2013
Net revenues	28'110
- COGS (excl D&A)	15'620
- Depreciation and amortization	1'590
Gross income	10'900
- SG&A Expenses	2'410
- Other expenses (income)	-247
EBIT	8'737
- Interest expenses	537
Pretax income	8'200
- Income taxes	2'610
Net income	5'590
+ After-tax interest expenses	365
NOPLAT	5'955

Cash flow statement	2013
Net income	5'590
+ After-tax interest expenses	365
NOPLAT	5'955
+ Depreciation and amortization	1'590
- Increase in operating assets	260
+ Increase in operating liabilities	30
Operating Cash Flow	7'315

Simplified balance sheet	31.12.2012	31.12.2013	Change
Excess cash	0	0	0
Operating assets	5'920	6'180	260
Long-term assets	29'470	30'450	980
Total assets	35'390	36'630	1'240
Operating liabilities	6'460	6'490	30
Debt	13'630	14'130	500
Common stock and capital	6'600	6'440	-160
Retained earnings	39'280	41'750	2'470
Treasury stock	-30'580	-32'180	-1'600
Total liabilities and equity	35'390	36'630	1'240

Interpretation: With its operating activities, McD has generated a cash flow of 7'315 million in 2013. Because of the substantial depreciation and amortization charges, this operating cash flow is considerably higher than the NOPLAT of 5'955 million

The free cash flow

- Next we look at the firm's investment activity. How much did the McD invest in 2013?

Simplified balance sheet	31.12.2012	31.12.2013	Change
Excess cash	0	0	0
Operating assets	5'920	6'180	260
Long-term assets	29'470	30'450	980
Total assets	35'390	36'630	1'240

Income statement	2013
Net revenues	28'110
- COGS (excl D&A)	15'620
- Depreciation and amortization	1'590
Gross income	10'900
- SG&A Expenses	2'410
- Other expenses (income)	-247
EBIT	8'737

Despite the fact that the firm had depreciation charges of 1'590, the long-term assets increased by 980 from 29'470 to 30'450. Hence, net investments were 2'570:

$$\begin{aligned}
 \text{Net investments} &= \text{Depreciation} + \text{Change in book value of long-term assets} \\
 &= 1'590 + 980 = 2'570.
 \end{aligned}$$

The free cash flow (2)

- By subtracting the net investments from the operating cash flow, we get the **Free Cash Flow** (FCF)

Cash flow statement	2013
Operating cash flow	7'315
- Net investments	2'570
Free Cash Flow	4'745

- **The free cash flow is the most important cash flow figure in firm valuation**
- It is the amount of money the firm generates that is not tied up in the operating or investment activities
- It is the amount of money that, in principle, can be distributed to the providers of capital (debt and equity).

The residual cash flow

- Next we look at cash flows from debt financing.
 - Interest expenses (after taxes!)
 - New borrowing / repayment of debt
- From above we know that after-tax interest expenses are 365 (=Interest expenses*(1-tax rate))
- Moreover, debt outstanding increased by 500, according to the balance sheet. → Cash inflow

Simplified balance sheet	31.12.2012	31.12.2013	Change
Excess cash	0	0	0
Operating assets	5'920	6'180	260
Long-term assets	29'470	30'450	980
Total assets	35'390	36'630	1'240
Operating liabilities	6'460	6'490	30
Debt	13'630	14'130	500
Common stock and capital	6'600	6'440	-160
Retained earnings	39'280	41'750	2'470
Treasury stock	-30'580	-32'180	-1'600
Total liabilities and equity	35'390	36'630	1'240

The residual cash flow (2)

- We find the residual cash flow (RCF) by subtracting cash outflows to debtholders and adding cash inflows from debtholders to the free cash flow.

Free Cash Flow	4'745
- After-tax interest expenses	365
+ New debt	500
Residual cash flow	4'880

- The residual cash flow shows how much money is available for distribution to the firm's shareholders
- The RCF is often used in equity valuation.

Change in excess cash

- The last step of the investigation is to look at the cash flows from equity financing.

Simplified balance sheet	31.12.2012	31.12.2013	Change
Excess cash	0	0	0
Operating assets	5'920	6'180	260
Long-term assets	29'470	30'450	980
Total assets	35'390	36'630	1'240
Operating liabilities	6'460	6'490	30
Debt	13'630	14'130	500
Common stock and capital	6'600	6'440	-160
Retained earnings	39'280	41'750	2'470
Treasury stock	-30'580	-32'180	-1'600
Total liabilities and equity	35'390	36'630	1'240

Paid-in capital decreased by 160
→ Cash outflow

Retained earnings increased by 2'470
Remember that net income was 5'590
→ Dividend of $5'590 - 2'470 = 3'120$

The value of the treasury shares increased by 1'600. This is the result of share repurchases. → Cash outflow

Change in excess cash (2)

- These considerations allow us to complete the cash flow statement:

Residual cash flow	4'880
+ New equity	-160
- Share repurchases	1'600
- Dividend payment	3'120
Change in excess cash	0

- The firm returned the whole residual cash flow to its shareholders. Consistent with that, excess cash does not change on the balance sheet.

Summary: Cash flow statement

Cash flow statement	2013	
Net income	5'590	
+ After-tax interest expenses	365	
NOPLAT	5'955	
+ Depreciation	1'590	
- Increase in operating assets	260	
+ Increase in operating liabilities	30	
Operating Cash Flow	7'315	
- Net Investments	2'570	
Free Cash Flow	4'745	← Available for debt and equity holders
- After-tax interest expenses	365	
+ New debt	500	
Residual cash flow	4'880	← Available for equity holders
+ New equity	-160	
- Share repurchases	1'600	
- Dividend payment	3'120	
Change in cash	0	

Our initial questions...

Question	Answer
How much cash did the firm generate in 2013?	It depends... Zero excess cash; other cash flow definitions see below.
How much did it generate from operations?	Operating Cash Flow = 7'315
How much was used for investments?	Cash Flow from Investment = -2'570
How much was available for distribution to the providers of capital (debt and equity)?	Free Cash Flow = 4'745
How much was available for distribution to the providers of equity?	Residual Cash Flow = 4'880
How much was actually distributed to the providers of capital (debt and equity)?	See debt cash flows and equity cash flows.

↻ The mechanics

- We started with net income and made adjustments to filter out the cash flows from operations, investments, and financing.
- In particular, to get operating cash flow:
 - **Add back interest payments after taxes** because this is a financing cash flow (therefore, we subtract it later on)
 - **Add back depreciation** (non-cash expenses)
 - Subtract the change in net working capital (and other non-cash revenues/expenses and earnings neutral cash flows)
- The cash flow statement allows us to see directly where the money comes from (operations, divestitures, financing) and where it goes to (operations, investments, financing).
- Therefore, it is an important element of financial planning.

Financial planning

- Introduction
- Historical Cash Flow Statement
- Cash Flow Projection

Forecasting the cash flow statement for valuation purposes (1)

- Percentage of sales method:
 - Identify the main driver(s) of the firm's business activities.
 - In many industries, sales are the main driving force. In other industries (f.ex., wealth management) it could be assets under management.
 - Find out how the other positions are related to sales. For example, operating cash could be 5% of sales, on average.
→ Express «all» other positions as a percentage of sales.
 - Forecast sales. By doing so, you implicitly also forecast «all» other positions.

Forecasting the cash flow statement for valuation purposes (2)

- T-Account method:
 - Explicitly model each account (f.ex., sales, COGS, investments) separately and use that information to derive the cash flow statement.
 - Method of choice for «extraordinary» activities (f.ex., large investments)
 - Often, we do not have enough information to implement this method. Moreover, many accounts (f.ex., accounts receivable) are likely to be a function of other accounts (f.ex., sales).
- In practice, it makes sense to combine the two approaches.

Forecasting the cash flow statement for valuation purposes (3)

- Suggested procedure:
 - Forecast the balance sheet and income statement using the percentage of sales method.
 - For the positions that are not directly related to sales, use the T-Account method.
 - Use the forecasted balance sheets and income statements to derive the cash flow statements. Follow the same procedure as before.
- Keep in mind that the balance sheets and income statements must be consistent! (Assets = Debt + Equity, etc.)
- A word of caution:
 - Each valuation is the result of a set of assumptions
 - Unreasonable assumptions produce useless forecasts

Example: McDonald's

- Let's go back to McDonald's and try to project 2014's cash flows... To do so, we make the following assumptions:
- Income statement assumptions (2014):

Item	Value	Assumption	Comments
Net revenues	27'810	Analyst forecasts	
COGS	58%	of <i>Net revenues</i>	Historical value
Depreciation	6%	of <i>Long-term assets at year end</i>	Historical value
SG&A	9%	of <i>Net revenues</i>	Historical value
Other expenses	0		
Interest expenses	3.25%	of <i>Debt</i> at the start of the year	Market-implied cost of debt
Tax rate	32%	of <i>Pretax income</i>	Historical value

Assumptions (cont'd)

■ Balance sheet assumptions (2014)

Item	Value	Assumption	Comments
Operating assets	22%	<i>of Net revenues</i>	Historical value
Long-term assets	110%	<i>of Net revenues</i>	Historical value
Operating liabilities	23%	<i>of Net revenues</i>	Historical value
Debt	50%	<i>of Net revenues</i>	Historical value
Common stock and capital	constant		
Dividend payment	56%	<i>on Net income</i>	Historical value
Share repurchases		Return all excess cash	

- Based on this information, derive McDonald's pro-formas for 2014 on the following slides.

The income statement (2014)

Income statement	2013	Assumption	E2014
Net revenues	28'110	Analyst forecast	27'810
- COGS (excl D&A)	15'620	58% of <i>Net revenues</i>	
- Depreciation and amortization	1'590	6% of <i>Long-term assets at year end</i>	
Gross income	10'900		
- SG&A Expenses	2'410	9% of <i>Net revenues</i>	
- Other expenses (income)	-247	Zero	
EBIT	8'737		
- Interest expenses	537	3.25% of <i>Debt</i> at the start of the year	
Pretax income	8'200		
- Income taxes	2'610	32% of <i>Pretax income</i>	
Net income	5'590		




The balance sheet (2014)

Simplified balance sheet	2013	Assumption	E2014
Excess cash	0	Constant	
Operating assets	6'180	22% of <i>Net revenues</i>	
Long-term assets	30'450	110% of <i>Net revenues</i>	
Total assets	36'630		
Operating liabilities	6'490	23% on <i>Net revenues</i>	
Debt	14'130	50% of <i>Net revenues</i>	
Common stock and capital	6'440	Constant	
Retained earnings	41'750	Set dividend to 56% of <i>Net income</i>	
Treasury stock	-32'180	Pay all excess cash out (keep the balance in balance)	
Total liabilities and equity	36'630		

Cash flow statement

Cash flow statement	2013	E2014
Net income	5'590	
+ After-tax interest expenses	365	
NOPLAT	5'955	
+ Depreciation	1'590	
- Increase in operating assets	260	
+ Increase in operating liabilities	30	
Operating Cash Flow	7'315	
- Investments	2'570	
Free Cash Flow	4'745	
- After-tax interest expenses	365	
+ New debt	500	
Residual cash flow	4'880	
+ New equity	-160	
- Share repurchases	1'600	
- Dividend payment	3'120	
Change in cash	0	

Getting ready...

- Historical balance sheets and income statements 
- Historical cash flow statement (fully linked) 
- “Reasonable” assumptions 

Solution

- First project all positions that are expected to be a constant or a % of *Net revenues*:

Income statement	Assumption	E2014
Net revenues	Analyst forecast	27'810
- COGS (excl D&A)	58% of <i>Net revenues</i>	16'130
- Depreciation	6% of <i>I-t assets at year end</i>	
Gross income		
- SG&A Expenses	9% of <i>Net revenues</i>	2'503
- Other expenses	Zero	0
EBIT		
- Interest expenses	3.25% of <i>Debt at year start</i>	
Pretax income		
- Income taxes	32% of <i>Pretax income</i>	
Net income		

Then we are ready to estimate the remaining positions

- Depreciation: 6% of 30'591 = 1'835
- Interest: 3.25% of 14'130 = 459
- Full income statement

Simplified balance sheet	2013	Assumption	E2014
Excess cash	0	Constant	0
Operating assets	6'180	22% of <i>Net revenues</i>	6'118
Long-term assets	30'450	110% of <i>Net revenues</i>	30'591
Total assets	36'630		36'709
Operating liabilities	6'490	23% on <i>Net revenues</i>	6'396
Debt	14'130	50% of <i>Net revenues</i>	13'905
Common stock and capital	6'440	Constant	6'440
Retained earnings	41'750	Set div. to 56% of <i>Net income</i>	
Treasury stock	-32'180	keep the balance in balance	
Total liabilities and equity	36'630		

Solution (cont'd)

■ The resulting income statement

Income statement	Assumption	E2014
Net revenues	Analyst forecast	27'810
- COGS (excl D&A)	58% of <i>Net revenues</i>	16'130
- Depreciation	6% of <i>I-t assets at year end</i>	1'835
Gross income		9'845
- SG&A Expenses	9% of <i>Net revenues</i>	2'503
- Other expenses	Zero	0
EBIT		7'342
- Interest expenses	3.25% of <i>Debt at year start</i>	459
Pretax income		6'883
- Income taxes	32% of <i>Pretax income</i>	2'202
Net income		4'680

■ The resulting balance sheet

Simplified balance sheet	2013	Assumption	E2014
Excess cash	0	Constant	0
Operating assets	6'180	22% of <i>Net revenues</i>	6'118
Long-term assets	30'450	110% of <i>Net revenues</i>	30'591
Total assets	36'630		36'709
Operating liabilities	6'490	23% on <i>Net revenues</i>	6'396
Debt	14'130	50% of <i>Net revenues</i>	13'905
Common stock and capital	6'440	Constant	6'440
Retained earnings	41'750	Set div. to 56% of <i>Net income</i>	43'809
Treasury stock	-32'180	keep the balance in balance	-33'841
Total liabilities and equity	36'630		36'709

Now we can complete the balance sheet

- a) Dividend: 56% of 4'680 = 2'621.
Hence, Retained earnings increase by:
Net income – Dividend
= 4'680 – 2'621 = 2'059.

Ret. earnings = 41'750 + 2'059 = 43'809

- b) To keep the balance in balance (A = L+E = 36'709), the value of the **treasury stock** in 2014 must be - **33'841**. This is an increase of 1'661 compared to 2013. Hence, expected **share repurchases** are 1'661.

The resulting cash flow statement

- Now we are ready to forecast the cash flow statement.
- We follow the very same procedure as before.

The forecasted cash flow statement

Cash flow statement	2013	E2014
Net income	5'590	4'680
+ After-tax interest expenses	365	312
NOPLAT	5'955	4'992
+ Depreciation	1'590	1'835
- Increase in operating assets	260	-62
+ Increase in operating liabilities	30	-94
Operating Cash Flow	7'315	6'796
- Investments	2'570	1'976
Free Cash Flow	4'745	4'819
- After-tax interest expenses	365	312
+ New debt	500	-225
Residual cash flow	4'880	4'282
+ New equity	-160	0
- Share repurchases	1'600	1'661
- Dividend payment	3'120	2'621
Change in cash	0	0

Our projections imply that McD will generate a FCF of 4.8 billion in 2014.

Summary

Simplified balance sheet	31.12.2012	31.12.2013	E2014
Excess cash	0	0	0
Operating assets	5'920	6'180	6'118
Long-term assets	29'470	30'450	30'591
Total assets	35'390	36'630	36'709
Operating liabilities	6'460	6'490	6'396
Debt	13'630	14'130	13'905
Common stock and capital	6'600	6'440	6'440
Retained earnings	39'280	41'750	43'809
Treasury stock	-30'580	-32'180	-33'841
Total liabilities and equity	35'390	36'630	36'709

Income statement	2013	E2014
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EBIT	8'737	7'342
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Pretax income	8'200	6'883
- Income taxes	2'610	2'202
Net income	5'590	4'680

Cash flow statement	2013	E2014
Net income	5'590	4'680
+ After-tax interest expenses	365	312
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+ New debt	500	-225
Residual cash flow	4'880	4'282
+ New equity	-160	0
- Share repurchases	1'600	1'661
- Dividend payment	3'120	2'621
Change in cash	0	0

↻ Pro-forma cash flow statement

- We have discussed the basic principles to compile the pro forma financial statements.
- Now we are able to understand the firm's sources and uses of cash, not only in the past but also in the future.
- This is one of the key skills we need to understand and implement valuation.